



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/618,254      | 07/11/2003  | Matthew Dubin        | H17-26023-01        | 3135             |

128 7590 10/06/2004

HONEYWELL INTERNATIONAL INC.  
101 COLUMBIA ROAD  
P O BOX 2245  
MORRISTOWN, NJ 07962-2245

|          |
|----------|
| EXAMINER |
|----------|

JUBA JR, JOHN

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2872

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/618,254

Applicant(s)

DUBIN ET AL.

Examiner

John Juba, Jr.

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18,38-49,60-73 and 98-122 is/are pending in the application.
- 4a) Of the above claim(s) 18,60-73,98-112 and 115-122 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 38-40,45 and 47-49 is/are rejected.
- 7) ☒ Claim(s) 41-44,46,113 and 114 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/16/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Claims 18, 60-73, 98-112, and 115-122 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 12, 2004.

### ***Specification***

The disclosure is objected to because of the following informalities. Appropriate correction is required:

On Page 13, line 2, it is believed that "LCD 512" should read LCD 511 (as described on Pg. 12, line 3; "512" is a lens, as described on Pg. 12, line 4).

On Page 13, line 4, it is believed that "screen 520" should read "screen 550", described as being substantially coincident with second beam splitter 540 (as described on Pg. 12, line 10, 520 is a first beam splitter).

### ***Claim Objections***

Claim 39 is objected to for the following informality. Appropriate correction is required:

In claim 39, the characterization of a light beam as having a single polarization mode is a misnomer. Any polarization state is inherently resolvable into two, mutually perpendicular polarization components. Rather, the beam may be distinguished from a beam comprising a random collection of polarization states as being "polarized".

Art Unit: 2872

Alternatively, the beam may be recited as having a polarization state parallel to one of the pass or rejection axes of the first or second polarizer.

***Claim Rejections - 35 USC § 112***

Claim 48 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 48 is confusing or incorrect in reciting that “the pass and rejection axes of the first beam splitter correspond respectively to the rejection and pass axes of the *first* beam splitter” [emphasis added]. It is believed that the correspondence is between axes of the first *and second* beam splitters. Otherwise, it is not clear how the pass axis of a polarizer can “correspond” with its own rejection axis.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 45, 47, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Kelly (U.S. Patent number 2,985,258). Referring to Figure 3 and the associated text, Kelly discloses a method for projecting an image, comprising the steps of

Art Unit: 2872

(a) transmitting an incident beam from a source through a pass axis of a first polarizing beam splitter (P1);

(b) reflecting the beam from a rejection axis of a second polarizing beam splitter (P2) positioned nonorthogonally with respect to the first beam splitter;

(c) reflecting and repolarizing the beam;

(d) reflecting the beam from a rejection axis of the first polarizing beam splitter; and

(e) transmitting the beam through a pass axis of the second polarizing beam splitter to a screen (S) *via* lens system (26);

wherein the Kelly performs the steps in the order of:

beginning with light directly from the source (I)(21) to perform step (b);

modulating the light at modulator (M), thereafter to perform step (a);

modulating the light at modulator (C);

performing step (d);

perform the step (c) at modulator (Y); and

performing step (e).

With particular regard to claim 49, the beam splitters are positioned at zero degrees with respect to each other, which is an angle less than ninety degrees. Although Applicants refer to their beam splitters as being at an “acute, non-parallel angle” (Pg. 12, line 26), the language of the claims is not so precise.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38 – 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukawa (U.S. Patent number 6,331,916), in view of Official notice (as evidenced by Mukawa). Referring *initially* to the embodiment of Figure 16, Mukawa discloses an optical device comprising

a first polarizing beam splitter (63) *inherently* having first pass and rejection axes, and positioned to receive an incident beam;

a second beam splitter (67) positioned at an acute angle to the first beam splitter; and

a reflector (68) positioned so that both beam splitters encounter the beam at least twice.

Further, Mukawa discloses that the second beam splitter (67) may be a polarizing beam splitter, and that a quarter wave plate may be provided (Col. 23, lines 18 – 20). Thus, Mukawa discloses the invention substantially as claimed. However, Mukawa does not disclose *in this illustrated embodiment* the particular placement of the quarter wave to provide a “repolarizing reflector”, and do not disclose the pass and rejection axes of the first polarizing beam splitter aligned respectively to the rejection and pass axes of the second polarizing beam splitter, as recited.

The examiner takes Official notice that the requisite arrangement of pass and rejection axes of a polarizing beam splitter and the placement of a repolarizing reflector in order to permit light to be twice incident on a polarizing beam splitter were well-known to those skilled in the art. Referring for example to Figure 15 of Mukawa, it was known to arrange a quarter wave plate (56) in front of reflector (58) so that light having its polarization aligned to a rejection axis of polarizer (57) is travels twice through the wave plate so as to have its polarization aligned with the pass axis of the polarization beam splitter (57) when it is incident at the polarizing beam splitter for the second time.

In modifying the embodiment of Figure 16 to have a second polarizing beam splitter and a quarter wave plate as suggested by Mukawa, it would have been obvious to one of ordinary skill to arrange the quarter wave plate between the beam splitter (67) and the reflector (68), in the interest of permitting light having it polarization state aligned to the rejection axis of the polarizing beam splitter (67) on the first pass to have its polarization rotated so as to pass through the polarizer (67) on the second pass, since such was well-known to be the requisite arrangement of components to provide the folded operation taught by Mukawa. Further, in order that the apparatus would continue to operate as disclosed by Mukawa while using only the single suggested wave plate, one of ordinary skill would have appreciated that it was necessary to have the rejection axis of the second polarizer correspond to the pass axis of the first polarizer, and *vice versa*.

With regard to claim 39, the beam incident *at prism (60-1)* is rendered with a single polarization mode by polarizer (17).

Art Unit: 2872

With regard to claim 40, convex refracting surface (62) fairly constitutes a “focusing element” for the beam incident on the display (20).

***Allowable Subject Matter***

Claims 41 – 44, 46, 113, and 114 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 48 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art, taken alone or in combination, fails to teach or fairly suggest *the combination* of elements,

particularly wherein the apparatus further includes a folding mirror reflecting the beam to the first beam splitter, as recited in claim 41;

particularly wherein the apparatus further includes a projection screen positioned to receive the beam after it has encountered both of the beam splitters twice, as recited in claim 42; or

particularly wherein the repolarizing reflector is positioned “non-diagonally” with respect to at least one of the beam splitters, as recited in claim 44.

The prior art, taken alone or in combination, fails to teach or fairly suggest *the combination of method steps*



Art Unit: 2872

particularly wherein the steps are performed in the order recited, as in claim 46;  
or

particularly wherein the pass and rejection axes of the first beam splitter correspond respectively to the rejection and pass axes of the *second* beam splitter, as it is believed would be recited in claim 48.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

All of the references cited during prosecution of parent application serial number 09/751,339 have been considered. However, unless they are listed on examiner's form PTO-892, applicant's form PTO-1449, or equivalent, they will not be listed on the face of any patent issuing from the instant application.


Handschy, et al (U.S. Patent number 5,900,976) discloses a method of using a repolarizing reflector to direct light to non-orthogonally arranged polarizing beam splitters for incidence at each beam splitter twice (Fig. 6).

Art Unit: 2872

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn whose number is (571) 272-2312 and who can be reached on Mon.- Thu., 9 – 5.

The centralized fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for *all* communications.

  
JOHN JUBA, JR.  
PRIMARY EXAMINER  
Art Unit 2872

September 30, 2004